BOTANICAL GAZETTE.

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Botanical Papers before the American Association.

The following is a full list of the papers entered upon the programme of the Association devoted to or touching upon botanical topics:

W. O. ATWATER, On the assimilation of atmospheric nitrogen by plants.

V. BALL, On the identification of the animals and plants of India which are mentioned by ancient Greek authors.

W. J. BEAL, The torsion of leaves; and Polarity of leaves of Erigeron Canadense.

C. E. BESSEY, The adventitious inflorescence of Cuscuta glomerata.

LOUIS ELSBERG, Demonstrations of perforations in the cellulose walls of plant-cells.

R. HITCHCOCK, Remarks on fluid and gelatinous media for cultivating micro-organisms.

JAMES HYATT, A discussion of the principles involved in the general action of vegetation, and of trees especially, to prevent extremes of temperature.

JOS. F. JAMES, Affinities of Dionæa.

WM. R. LAZENBY, The influence of cross fertilization upon the development of the strawberry.

GEO. MACLOSKIE, Stomates on seeds.

LILLIE J. MARTIN, A botanical study of the mite-gall on the petiole of Juglans nigra, known as Erineum anomalum Schw.

THOMAS MEEHAN, On the extinction of species.

C. S. MINOT, Biological problems; and Researches on growth and death.

H. N. MOSELEY, Utricularia vulgaris with young teleostean fishes entrapped in the bladder-traps.

ALFRED SPRINGER, Fermentation without combined nitrogen.

GEO. M. STERNBERG, Methods of cultivating micro-organisms.

E. LEWIS STURTEVANT, Influence of insulation upon vegetation.

L. F. WARD, The fossil flora of the globe; historical view, geological view, botanical view.

We are doubtless justified in saying that from a strictly botanical stand-point, none of these reached a high plane of scientific importance, unless we except the last one. Quite a number of them, however, were not intended as contributions to botanical science, and their value is to be judged by other standards. Some of the papers were not read, owing to the absence of the authors when the papers were called, and others were not heard by the editors. The following items are all our space will permit.

We are enabled to give elsewhere an abstract, prepared by the author, of Prof. Ward's valuable paper on fossil botany. It excited much interesting discussion, in which Mr. Carruthers drew attention to the necessity of caution in using the determinations of many fossil forms, especially of those below the Devonian. Many of the monocotyledons of the earlier periods are now known positively to be fragments of forms of other groups. The cryptogams of the Carboniferous strata, and other archæan types, had often undoubtedly peculiar vegetative structures, but their reproductive organs were not materially different from the forms of the present time, and they will all fall into groups established upon living forms. Prof. Ward in replying said there were at present three great schools of paleobotanists: the English, represented by Mr. Carruthers and Mr. Stevenson, the French, represented by M. Saporta and others, and the Swedish school, each with its special views. Prof. Macloskie mentioned the great gap that undoubtedly exists just before the almost simultaneous appearance of the Apetalæ, Polypetalæ and Gamopetalæ. Mr. John Ball pointed out that very likely the originals of the dicotyledons were largely lost through unfavorable conditions for their preservation.

The papers of Dr. Minot called forth a vigorous discussion between botanists and zoologists and between American and English scientists. He said in the first paper that the Linnæan system of nomenclature in its original significance has really become obsolete, although the majority of naturalists may not be aware of the fact, and based this statement on the gradual approximation of the number of species to the number of genera. Mr. Carruthers dissented from this view, and said that on the

other side the Atlantic the Linnæan system was in as full force as it was in the days of its author. Dr. Gray fully concurred in this opinion, and doubted if the proportion of genera to species had much changed since Linnæus' time. He also said that the binary system was made for botanists, was kept by them, modified by them, and even to-day serves them as well as a system can well do. The time may come when zoologists will again adopt the true Linnæan system of genera, preserved in its purity by botanists. Prof. Cope said the Linnæan use of genera in zoology was not so strictly adhered to as in botany.

The second paper by Dr. Minot treated of individuality, as influenced by death, and whether death is coextensive with life. Prof. Huxley has said that the whole group of cells springing from a single cell forms one individual, i. e. one cycle of cell life. But if this is a universal definition, then death does not occur among many of the protophyta and protozoa, for they keep up a continuous life by successive divisions. Death is possibly a development that arises along with the differentiation of the higher forms. Mr. Meehan used the sunflower to show that the cycle of life is only a matter of nutrition, for while it usually dies in one year, cuttings may be taken which will continue the growth for another year, and so on. This is true of many other plants. Mr. Alpheus Hyatt had been unable to accurately apply the term individual, so used the new term zoon in the same manner as phyton is used in botany. Dr. Gray said individuality is a matter which is striven after in the organic world, is arrived at in the animal kingdom, but probably only fully achieved in the conscious animal. Several other equally eminent authorities spoke upon the subject.

Miss Martin comes to the conclusion from her study of the walnut *Erineum* that the gall starts very early in the growth of the petiole, and that the development is inward, as shown by the position of the eggs of the mite, and the absence of any sign that the tissues have been pierced. The paper received the special commendation of Dr. Gray.

Prof. Macloskie said that stomata had been reported on the seeds of *Magnolia* and *Lilium speciosum*, to which he added *Polygala*, *Viola*, *Carya*, *Juglans*, *Caulophyllum*, *Fagus*, and *Arisæma triphyllum* on the accessory coat.

Prof. Bessey had found by close examination of young plants of *Cuscuta glomerata* that the inflorescence arose from crowded adventitious buds, and not from the repeated branching of axillary flower-branches, as is commonly stated.